COLLEMBOLA FOUND UNDER THE BARK OF DEAD TREES IN CALIFORNIA, WITH DESCRIPTIONS OF TWO NEW SPECIES

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FAMILY SMINTHURIDÆ

Sminthurus niger Lubbock, Trans. Linn. Soc. Lond., 1867. Under bark of dead Redwood (*Sequoia sempervirens*) in Big Basin, Santa Cruz Mts.; Jeffrey pine (*Pinus jeffreyi*) at Idyllwild, San Jacinto Mts.

FAMILY ENTOMOBRYIDÆ

Isotoma viridis Bourlet, Memoir. Soc. Sci. Agric., Lille, Pt. 1, p. 401, 1839.
Under bark of dead Jeffrey pine (*Pinus jeffreyi*) in the San Jacinto Mts.

Isotoma aspera Bacon, "Collembola of the Claremont-Laguna Region," Pomona College Jl. of Ent. & Zool., Vol. VI, p. 49, 1914.
Under bark of dead *Quercus agrifolia* near the Calaveras Reservoir, Diablo Range.

Drepanura californica Schött, "Beitrage Zur Kentniss Kalifornischer Collembola." Bihang. Kongl. Svenska Acad. Handl., Band 17, Afd. IV, No. 8, pp. 1-24, Stockholm, 1891.
Under bark of dead alder (*Alnus rhombifolia*) in San Antonio Canyon, San Bernardino Mts.; Arroyo Seco, San Gabriel Mts.; Madrone Hot Springs, Diablo Range.

Entomobrya clitellaria Guthrie "Collembola of Minnesota," Rept. Geol. Nat. Hist. Survey of Minn., Zool. Ser. No. 4, p. 75, 1903.
Under bark of many kinds of dead trees throughout California.

Entomobrya multifasciata (Tullberg) "Fört. öfv. Sveriges Podurider." Ofv. K. Vet. Akad. Förh., 28; p. 148, 1871.
Under bark of dead oaks and various conifers throughout California.

Entomobrya sexoculata Schött var. ? Proc. Calif. Acad. Sci., 2nd Ser., Vol. 6, p. 180, 1896.

A steel blue variety taken under the bark of dead alder in the Arroyo Seco, San Gabriel Mts.

Entomobrya suzannæ Scott, n. sp.

Figs. 9-10

Color: Amber yellow with mottlings of dark blue. Head with lateral blue markings extending posteriorly from the eyes and a spot at the base of each antenna. The dorsal apices of the thoracic and first abdominal segments with blue markings, sometimes fairly even but very irregular in other instances. Fourth abdominal segment with transverse lateral bands of blue radiating from an irregular dorsal spot. Segment V with two lateral spots; segment VI unpigmented. Legs with very regular pigmentation: coxae with a compact blue spot; trochanters usually unpigmented: the fore femora slightly tinged with blue, middle and hind femora densely pigmented apically; tibio-tarsi with a well-defined wide median band of blue. Basal joint of antennæ usually slightly pigmented; second joint with diffused coloring, the third and fourth entirely blue. Furcula entirely yellow as is the ventral tube. Pronotum thickly clothed with long clavate hairs. Manubrium nearly equal to dentes in length. Crenulations on the dens end at a distance from the apex equal to three times the length of the mucro. Mucone with two teeth and a basal spine reaching to the tip of the anteapical tooth. Claws: Ungius slender with a slight incurve to the tip and a pair of lateral basal teeth; inner margin armed with a median pair of teeth and a large apical tooth. Unguilicus slender, unarmed, two-thirds as long as unguis. Tenent hair shorter than unguis. Ocelli 16. Length 2.5 mm.

Type locality, Alpine Creek, Santa Cruz, Mts.

Paratypes, Stevens Creek, Santa Cruz Mts.; Calaveras Reservoir, Diablo Range.

Taken under the bark of dead alder in very damp and cool situations. Not common. November-February. This species is close to an eastern form, *E. ligata* Folsom, but it is larger than *ligata* and has definite structural differences.

Entomobrya binoculata Schött Proc. Calif. Acad. Sci., 2nd Ser., Vol. VI, p. 178, 1896.

Taken under the bark of dead Monterey Cypress (*Cupressus macrocarpa*) on the Stanford University campus and under the bark of dead Digger pine (*Pinus sabiniana*) near Madrone Hot Springs, Diablo Range.

Tomocerus vulgaris Tullberg "Förteckning Ofver Svenska Podurider," Ofv. K. Vet. Akad. Förh., 28: pp. 143-155, 1871.
Taken under bark of dead alder (*Alnus rhombifolia*) and Douglas fir (*Pseudotsuga douglasii*) on Alpine Creek and Steven's Creek, Santa Cruz Mts.

Tomocerus flavescens Tullberg var. *arcticus* Schött "Zur Systematik Palearctischer Collembola." K. Svenska Vet.-Akad. Handl, Vol. 25, No. 11, 1894.
Taken under bark of dead alder near Madrone Hot Springs, Diablo Range.

Lepidocyrtus decemoculatus Guthrie "Collembola of Minnesota." Rept. Geol. Nat. Hist. Survey of Minn., Zool. Ser. No. 4, p. 85, 1903.
First record of this species in Californnia. Taken under bark of dead Monterey cypress (*Cupressus macrocarpa*) in Altadena, Cal.

Family Poduridæ

Xenylla helena Scott, n. sp.

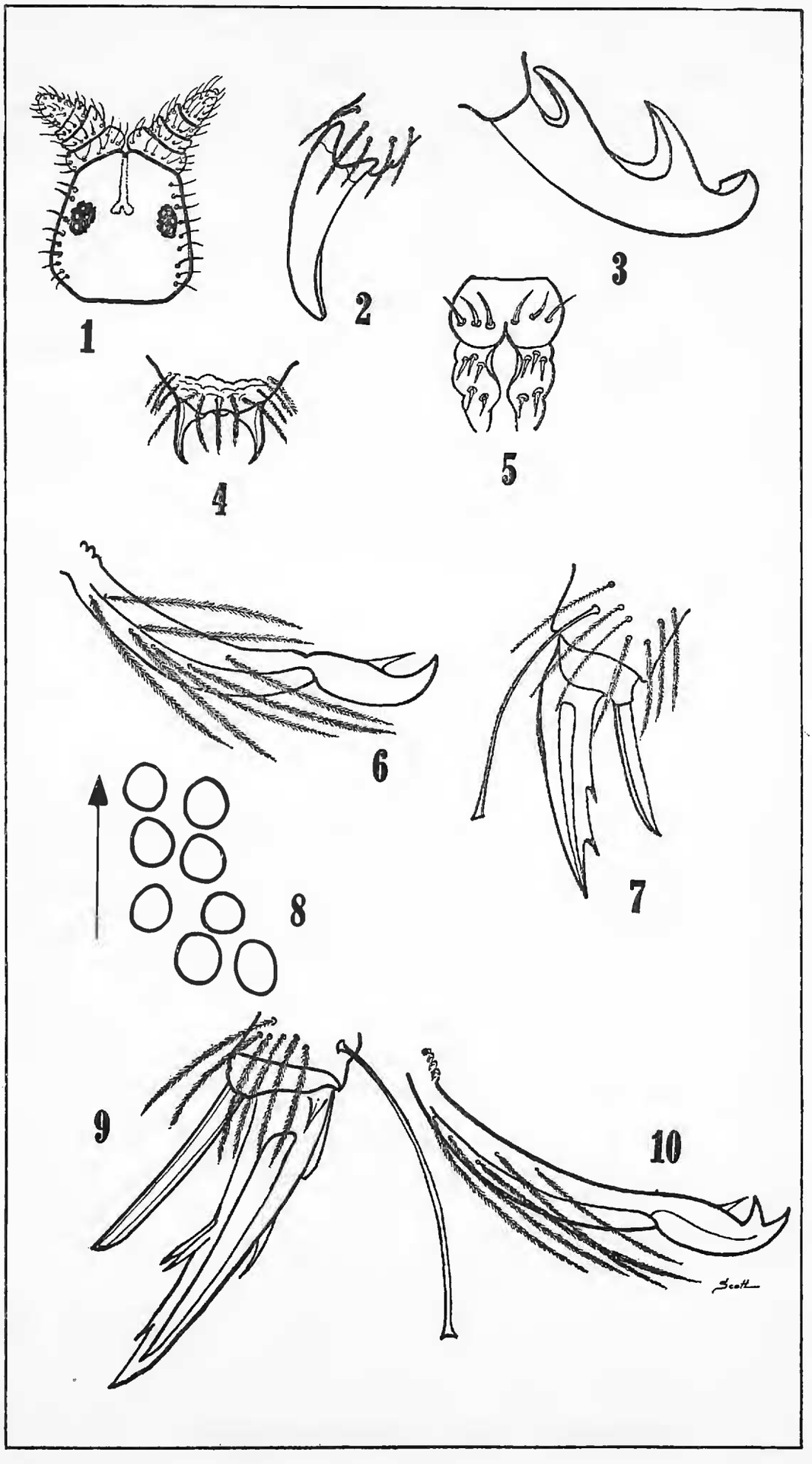
Figs. 1-5

Color: Ground color light blue with mottlings of dark olive brown. Integument granular. Antennæ four jointed, contiguous at base, each succeeding joint narrower than the last. Mouthparts in the form of a cone beneath the head. Two anal horns present on last abdominal segment. Furcula small and abortive, attached to antepenultimate segment; dentes slightly longer than manubrium. Mucrones two-thirds as long as dentes. Dentes with five dorsal spines. Mucrones with two long curved anteapical teeth and a short and blunt apical tooth. Feet with a single, stout, unarmed, blunt claw. Ocelli 10. Length 1.12 mm.

Type locality: Arroyo Seco, San Gabriel Mts. Taken under the bark of dead alder in very damp and moldy surroundings. January.

Family Aphoruridæ

Onychiurus fimetarius (Lubbock) (Lipura) Monograph of Collembola and Thysanura, p. 191, London, 1873.
Taken in very moldy and slimy conditions under bark of dead California live oak (*Quercus agrifolia*). Also taken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on the inside of a decaying acorn which was found eight inches under ground. Altadena, Cal.

Explanation of Plate

Note: All magnifications given below apply to the plate after it has been reduced one-half from the original.

Xenylla helena Scott, n. sp. Fig. 1. Head X 60; Fig. 2. Claw of left hind foot X 300; Fig. 3. Right mucro X 400; Fig. 4. Caudal horns X 150; Fig. 5. Manubrium and dentes showing arrangement of spines X 100.

Drepanura californica Schott. Fig. 6. Right mucro X 300; Fig. 7. Claw of left mid-foot X 300; Fig. 8. Left eye-spot X 100.

Entomobrya suzanne Scott n. sp. Fig. 9. Claw of right foot X 400. Fig. 10. Left mucro X 400.

NOTES ON CROSS MATING INVOLVING TROPAEA LUNA L. AND THE GENUS SAMIA

(Lepidoptera: Saturniidæ)

BY J. BRUCE DUNCAN

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Observations in 1935 and again in the spring of 1936 revealed that when females of *Tropaea luna* were confined in a cage containing males and females of *Samia gloveri*, males of the latter seemed to show a preference for copulating with the *luna* females while the females of *gloveri* remained unmated. On the other hand there seemed to be no tendency on the part of the *luna* males to mate with females of *gloveri*, although the two were confined together during ten different attempts to induce mating. Furthermore the females of *luna* were not interested at all in the presence of the male *gloveri* and discouragd scores of attempts made by the latter to mate with them.

Male *gloveri* invariably centered their attention by preference upon *luna* females. The males began their mating activities just before dawn each morning and would either have mated or ceased all mating activities long before the sun made its appearance. When several were in the cage they would beat their wings rapidly while walking on the wire screen and would circle around and around the female. Not until one had successfully mated with her would they direct their attention to the females of their own species in the breeding cage.

Copulations occurred in May, 1935, when two *gloveri*